

## Trend Study 25A-12-04

Study site name: East Tidwell.

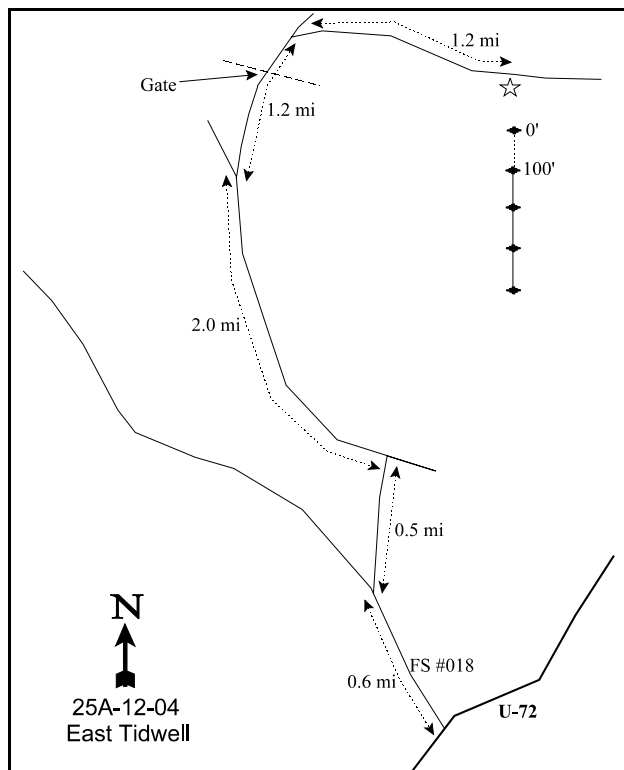
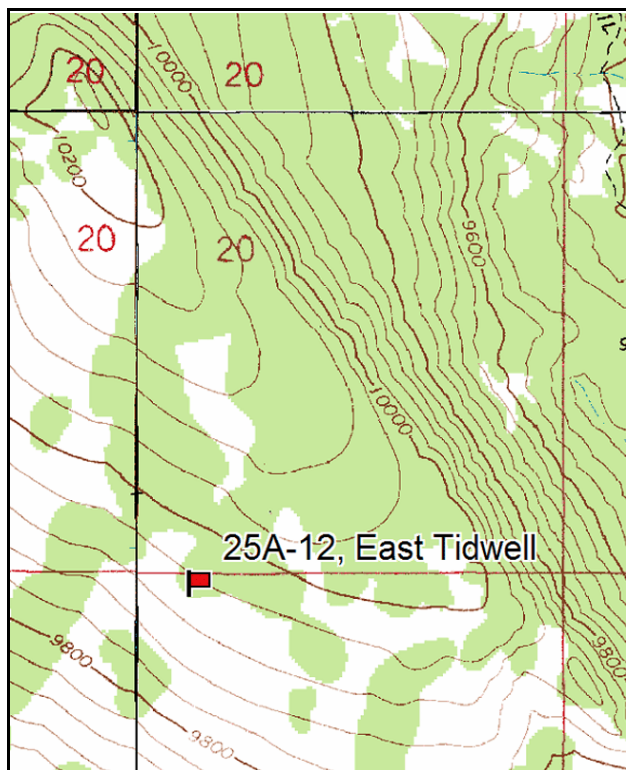
Vegetation type: Alpine-Mixed.

Compass bearing: frequency baseline 173 degrees magnetic.

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

### LOCATION DESCRIPTION

Traveling north on U-72 from Fremont, turn west on Forest Service road #018 (between the cattleguard and mile marker #16). Go 0.6 miles (crossing a cattleguard) to a fork in the road, go right. One-half mile later you'll come to a "T" in the road, stay to the left. Go 2.0 miles and turn right at a fork that goes up a steep hill. After 0.1 miles there is a faint intersection. Stay on the main road heading north for 0.9 miles to a gate. Go through the gate and go 0.2 miles to a fork in the road. Stay to the right and go through a grove of trees, up a steep and rocky road. Here the road becomes very faint, but travel 1.2 miles to a witness post. The 0 foot baseline stake is easy to see, and has browse tag #9078 attached.



Map Name: Geyser Peak

Diagrammatic Sketch

Township 25S, Range 4E, Section 20

GPS: NAD 27, UTM 12S 4273874 N, 456600 E

## DISCUSSION

### East Tidwell - Trend Study No. 25A-12

The East Tidwell study was established in 1991. It is located on summer range with a 12% southwest facing slope at an elevation of 9,950 feet. The plant community consists entirely of low growing shrubs, forbs, and grasses. The area is grazed by cattle and used heavily by elk. It is within the Solomon allotment which is grazed by cattle on a deferred rotation. On odd numbered years, grazing occurs from August 20 to September 20, and on even numbered years, it is grazed from September 20 to October 31. Pellet group data from 1999 estimated 15 deer and 68 elk days use/acre (37 ddu/ha and 168 edu/ha). Nearly all of the deer and about 75% of the elk pellet groups appeared to be from the spring or early summer. Pellet group data in 2004 estimated 16 deer, 35 elk, and 5 cow days use/acre (40 ddu/ha, 86 edu/ha, 13 cdu/ha). All cattle pats appeared to be from the previous season. There is a water trough about 600 feet south of the site which is fed by a pipe that goes to a fenced spring about half mile to the north. There was no water in the trough during the 1999 reading and it appeared that the pipeline was not functioning.

Soil at the site is well drained and moderately deep with an effective rooting depth of 16 inches. Rock and especially pavement are abundant on the surface. The profile contains mostly gravel sized rock with larger rock concentrated at 10 to 12 inches in depth. Texture of the soil is a loam with a slightly alkaline pH (7.5). Parent material is basalt. Bare ground is low due to the well armored nature of the soil surface. Erosion is stable and there are no active gullies in the area.

The most dominant browse species is Parry rabbitbrush, which had about 6% cover in 1999 and increased to nearly 11% in 2004. Parry rabbitbrush had an estimated density of 38,865 plants/acre in 1991, which declined to 13,140 in 1999. This change in density may be due to the increased sample size in 1999, which gives a more representative estimate for shrub densities that have distributions that are clumped and/or discontinuous. It also appears that the stickyleaf low rabbitbrush (*Chrysothamnus viscidiflorus viscidiflorus*) was called Parry rabbitbrush (*Chrysothamnus parryi*) in 1991. In 2004, Parry rabbitbrush density declined 44% to 7,420 plants/acre. Utilization has been light. Several other shrubs occur in relatively small numbers including: black sagebrush, mountain big sagebrush, fringed sagebrush, stickyleaf low rabbitbrush, and gray horsebrush.

Due to the high elevation of this site, the herbaceous understory is the key forage source for big game and livestock. Grasses and forbs are diverse and moderately abundant. Eleven species of grasses were sampled in 1999 and 2004. Prairie Junegrass, slender wheatgrass, mutton bluegrass, bottlebrush squirreltail, and letterman needlegrass, are the most common grasses. No utilization was noted on the grasses in 1999 and 2004. Slender wheatgrass and Letterman needlegrass had significant increases in nested frequency, while mutton bluegrass declined significantly in 2004. Forbs are also diverse with 28 species encountered in 1999 and 25 in 2004. Forb cover was about 14% in 1999 and 2004, compared to about 9% for grasses. There are several useful species on the site, although many of the common forbs are low growing less desirable types such as pussytoes, low fleabane, Eaton fleabane, trailing fleabane, pingue hymenoxys, and elegant cinquefoil. Some of the paintbrush and bastard toadflax had been utilized in 1999. Penstemon had been grazed in 2004.

### 1991 APPARENT TREND ASSESSMENT

With the high amount of rock cover, it is unlikely that there will be erosion problems in the future. The overstory consists mostly of rabbitbrush. There is a diversity of grasses and forbs but only a few shrubs. Because of the high diversity, the site will most likely be able to recover from stressful ecological events, but could be compromised because of the high density of rabbitbrush.

## 1999 TREND ASSESSMENT

Trend for soil is stable. Percent cover of bare ground declined but litter cover also declined from 22% to only 6%. The soil surface is well protected by vegetation and pavement and erosion does not appear to be a problem. Shrubs are not a particularly important component on this high elevation site. Trend for browse appears stable for the key species, Parry rabbitbrush. The decline in density since 1991 is due to a combination of the much larger sample used in 1999 and misidentification of low rabbitbrush in 1991. The population is mostly mature, lightly browsed, and in good vigor. The key vegetational component at this elevation is the herbaceous understory, especially the forbs. Trend for the herbaceous understory is stable for grasses and down slightly for forbs. Overall, the herbaceous trend is considered down slightly.

### TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - down slightly (2)

## 2004 TREND ASSESSMENT

The trend for soil is stable. Relative bare ground increased slightly from 4% to 7%, but is still very low. Rock and pavement are abundant to protect the soil surface. The browse trend is stable. Parry rabbitbrush density is lower, but cover is higher. It appears to be stable as a dominant species at this site. Black sagebrush and mountain big sagebrush densities are slightly higher, but still low. Broom snakeweed and gray horsebrush densities are higher. The herbaceous understory is the more important vegetation component on summer range. The trend for the herbaceous understory is slightly down. The sum of nested frequency for both grasses and forbs is slightly down. Cover has remained fairly stable. Diversity and abundance of herbaceous species is very good.

### TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - down slightly (2)

## HERBACEOUS TRENDS --

Management unit 25A, Study no: 12

Type	Species	Nested Frequency			Average Cover %	
		'91	'99	'04	'99	'04
G	Agropyron trachycaulum	a <sup>-</sup>	b <sup>24</sup>	c <sup>79</sup>	.32	1.04
G	Bouteloua gracilis	b <sup>24</sup>	ab <sup>14</sup>	a <sup>2</sup>	.03	.00
G	Carex spp.	b <sup>49</sup>	a <sup>9</sup>	a <sup>15</sup>	.10	.16
G	Festuca ovina	b <sup>59</sup>	b <sup>77</sup>	a <sup>19</sup>	.70	.10
G	Koeleria cristata	132	159	165	2.15	3.16
G	Poa fendleriana	a <sup>89</sup>	b <sup>170</sup>	a <sup>103</sup>	2.92	1.53
G	Sitanion hystrix	b <sup>128</sup>	a <sup>84</sup>	a <sup>66</sup>	1.22	.98
G	Stipa comata	a <sup>-</sup>	b <sup>10</sup>	a <sup>1</sup>	.06	.04
G	Stipa lettermani	c <sup>184</sup>	a <sup>68</sup>	b <sup>126</sup>	1.35	2.29

T y p e	Species	Nested Frequency			Average Cover %	
		'91	'99	'04	'99	'04
	Total for Annual Grasses	0	0	0	0	0
	Total for Perennial Grasses	665	615	576	8.88	9.32
	Total for Grasses	665	615	576	8.88	9.32
F	Agoseris glauca	<sub>b</sub> 46	<sub>a</sub> 20	<sub>a</sub> 4	.15	.09
F	Antennaria rosea	70	62	67	1.21	2.53
F	Androsace septentrionalis (a)	-	<sub>b</sub> 31	<sub>a</sub> 1	.11	.00
F	Aster spp.	<sub>b</sub> 38	<sub>a</sub> 7	<sub>a</sub> 1	.01	.00
F	Astragalus spp.	76	55	61	1.55	.76
F	Chaenactis douglasii	5	7	10	.01	.17
F	Comandra pallida	<sub>a</sub> -	<sub>b</sub> 9	<sub>ab</sub> 7	.10	.04
F	Delphinium spp.	2	-	-	-	-
F	Eriogonum alatum	-	5	10	.06	.09
F	Erigeron eatonii	7	14	12	.32	.08
F	Erigeron flagellaris	-	5	7	.01	.18
F	Erigeron pumilus	<sub>a</sub> 5	<sub>b</sub> 56	<sub>c</sub> 79	1.10	1.79
F	Eriogonum umbellatum	19	29	32	.52	.46
F	Gentiana calycosa	<sub>b</sub> 34	<sub>b</sub> 18	<sub>a</sub> -	.25	-
F	Geranium caespitosum	<sub>b</sub> 174	<sub>a</sub> 103	<sub>a</sub> 114	1.65	1.73
F	Hymenoxys richardsonii	<sub>b</sub> 82	<sub>b</sub> 68	<sub>a</sub> 46	1.59	1.08
F	Ivesia gordonii	<sub>b</sub> 29	<sub>a</sub> 6	<sub>a</sub> -	.04	-
F	Lesquerella wardii	<sub>b</sub> 58	<sub>a</sub> 13	<sub>a</sub> 4	.05	.01
F	Linum lewisii	<sub>a</sub> 22	<sub>b</sub> 56	<sub>a</sub> 29	.86	.57
F	Lupinus argenteus	4	7	6	.39	.40
F	Lychnis drummondii	<sub>a</sub> -	<sub>b</sub> 13	<sub>a</sub> -	.06	-
F	Lygodesmia spp.	-	-	-	-	.00
F	Machaeranthera canescens	<sub>b</sub> 90	<sub>a</sub> 7	<sub>a</sub> 14	.07	.24
F	Oxytropis lambertii	<sub>ab</sub> 14	<sub>b</sub> 45	<sub>a</sub> 4	.49	.30
F	Penstemon spp.	<sub>b</sub> 95	<sub>b</sub> 80	<sub>a</sub> 39	.43	.33
F	Phlox longifolia	<sub>b</sub> 121	<sub>a</sub> 49	<sub>a</sub> 66	.17	.29
F	Potentilla concinna	<sub>b</sub> 134	<sub>a</sub> 39	<sub>a</sub> 26	.75	.83
F	Polygonum douglasii (a)	-	2	-	.00	-
F	Potentilla gracilis	<sub>a</sub> -	<sub>b</sub> 26	<sub>c</sub> 61	.06	.72
F	Senecio multilobatus	<sub>a</sub> 41	<sub>c</sub> 158	<sub>b</sub> 78	1.60	.64
F	Taraxacum officinale	<sub>b</sub> 26	<sub>ab</sub> 14	<sub>a</sub> 8	.10	.02
F	Unknown forb-perennial	2	-	-	-	-
	Total for Annual Forbs	0	33	1	0.11	0.00

T y p e	Species	Nested Frequency			Average Cover %	
		'91	'99	'04	'99	'04
	Total for Perennial Forbs	1194	971	785	13.69	13.43
	Total for Forbs	1194	1004	786	13.80	13.44

Values with different subscript letters are significantly different at alpha = 0.10

#### BROWSE TRENDS --

Management unit 25A, Study no: 12

T y p e	Species	Strip Frequency		Average Cover %	
		'99	'04	'99	'04
B	Artemisia frigida	40	33	.37	.79
B	Artemisia nova	5	11	.53	.78
B	Artemisia tridentata vaseyana	2	9	.15	.19
B	Chrysothamnus parryi	81	97	5.82	10.76
B	Chrysothamnus viscidiflorus viscidiflorus	47	44	.71	1.06
B	Gutierrezia sarothrae	27	71	.06	1.82
B	Symphoricarpos oreophilus	1	0	-	-
B	Tetradymia canescens	43	54	.95	1.93
	Total for Browse	246	319	8.61	17.35

#### CANOPY COVER, LINE INTERCEPT --

Management unit 25A, Study no: 12

Species	Percent Cover '04
Artemisia frigida	.83
Artemisia nova	.33
Artemisia tridentata vaseyana	.56
Chrysothamnus parryi	16.39
Chrysothamnus viscidiflorus viscidiflorus	3.25
Gutierrezia sarothrae	2.50
Tetradymia canescens	2.29

KEY BROWSE ANNUAL LEADER GROWTH --  
Management unit 25A, Study no: 12

Species	Average leader growth (in)
	'04
Artemisia nova	1.3
Artemisia tridentata vaseyana	2.7

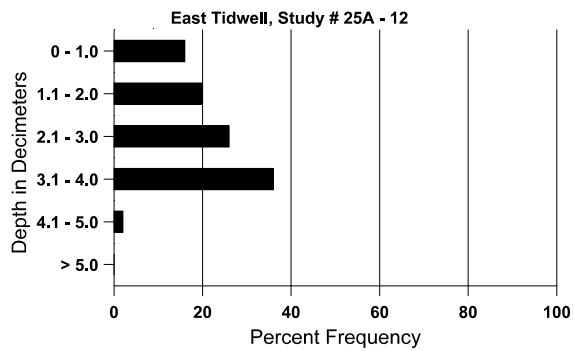
BASIC COVER --  
Management unit 25A, Study no: 12

Cover Type	Average Cover %		
	'91	'99	'04
Vegetation	10.50	30.06	34.51
Rock	13.25	10.85	9.94
Pavement	44.25	43.96	54.81
Litter	22.25	6.19	8.01
Cryptogams	.25	.18	.24
Bare Ground	9.50	4.02	8.05

SOIL ANALYSIS DATA --  
Management unit 25A, Study no: 12, Study Name: East Tidwell

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	ds/m
16.0	48.0 (14.8)	7.5	47.3	29.4	23.3	3.1	21.0	166.4	0.6

## Stoniness Index



PELLET GROUP DATA --

Management unit 25A, Study no: 12

Type	Quadrat Frequency		Days use per acre (ha)	
	'99	'04	'99	'04
Rabbit	12	34	-	-
Elk	37	25	68 (168)	35 (86)
Deer	17	15	15 (37)	16 (40)
Cattle	2	1	1 (2)	5 (13)

BROWSE CHARACTERISTICS --

Management unit 25A, Study no: 12

		Age class distribution (plants per acre)					Utilization					
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
<i>Artemisia frigida</i>												
91	<b>1133</b>	66	933	200	-	-	18	6	-	-	0	2/5
99	<b>4520</b>	80	640	3880	-	-	1	0	-	-	0	5/7
04	<b>1240</b>	-	60	1180	-	-	8	2	-	-	0	8/11
<i>Artemisia nova</i>												
91	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
99	<b>140</b>	-	40	100	-	-	0	0	-	-	0	10/28
04	<b>380</b>	80	120	260	-	20	0	0	-	-	0	10/20
<i>Artemisia tridentata vaseyana</i>												
91	<b>399</b>	-	-	333	66	-	17	67	17	-	0	4/5
99	<b>40</b>	-	-	40	-	-	50	0	0	-	0	8/20
04	<b>240</b>	120	20	220	-	-	42	8	0	-	0	13/28
<i>Chrysothamnus parryi</i>												
91	<b>38865</b>	4333	10733	17066	11066	-	36	22	28	1	5	4/6
99	<b>13140</b>	120	1220	11400	520	60	.76	0	4	1	1	5/8
04	<b>7420</b>	120	400	6920	100	60	2	.53	1	.26	.26	5/9
<i>Chrysothamnus viscidiflorus viscidiflorus</i>												
91	<b>0</b>	-	-	-	-	-	0	0	0	-	0	-/-
99	<b>2220</b>	-	220	1900	100	-	0	.90	5	4	4	5/9
04	<b>2480</b>	-	100	2260	120	-	0	0	5	4	4	7/12
<i>Gutierrezia sarothrae</i>												
91	<b>599</b>	-	266	333	-	-	11	0	-	-	0	3/3
99	<b>960</b>	20	100	860	-	-	0	0	-	-	0	4/6
04	<b>3860</b>	-	-	3860	-	-	0	0	-	-	0	5/8

		Age class distribution (plants per acre)					Utilization					
Y e a r	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
<i>Symphoricarpos oreophilus</i>												
91	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
99	<b>20</b>	-	-	20	-	-	100	0	-	-	0	8/30
04	<b>0</b>	-	-	-	-	-	0	0	-	-	0	10/31
<i>Tetradymia canescens</i>												
91	<b>1332</b>	66	200	666	466	-	40	25	35	2	5	4/5
99	<b>2280</b>	80	620	1560	100	-	9	0	4	.87	.87	6/9
04	<b>3120</b>	-	280	2800	40	-	7	2	1	.64	3	6/11